Space Weather Forecast

Issued on Saturday 15 February 2025 at 01:17 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1/Minor Geomagnetic Storms. Likely Radio Blackouts.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate solar activity was observed in the last 24 hours, with three Moderate-class flares occurring: these mostly from the largest region in the southeast. There are currently twelve sunspot regions on the visible disc, of which eight are numbered. There are five notable regions at present, the first of which is the aforementioned large region in the southeast nearing centre disk. This spot has a large central asymmetric spot surrounded by peripheral spots, most of which are small, though one of opposite polarity has now developed. the spot in in the southwest, saw a continued spreading tendency and a trend towards a more open character. There is a small spot near south centre disk which is small and apparently unremarkable, yet has been the source of a number of flares and faint coronal mass ejections recently. A spot has continued to develop the southern coronal hole, splitting it into two. Finally, the new region near the southeast limb, has continued to rotate into view, and is rather bright on imagery. All other spots are relatively simple with only little changes observed.

Two or three faint coronal mass ejections were observed perhaps leaving the region near southern centre disk during 14 Feb, though confidence is low. These may give glancing impacts days 2-3 (16-17 Feb).

Solar Wind / Geomagnetic Activity: Solar winds showed an ongoing connection to a fast wind. The solar wind speed was erratic, but showed an overall slight rise from slightly elevated to elevated by the period's end. The Interplanetary Magnetic Field was Moderate. The north-south component varied between weakly positive and moderately negative. The net result of the above solar wind measures was Unsettled to Active geomagnetic activity, with a peak of G1/Minor storm (Kp 5) in the UTC early hours of 14 February.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Isolated Moderate-class flares are considered Likely, with a level trend expected.

Solar Wind / Geomagnetic Activity: Two or three faint coronal mass ejections give a chance of glancing impacts days 2-3 (16-17 Feb). Coronal hole fast winds continue, with a gradual rise and

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then fall over a roughly three-day span (easing by 18 Feb) most likely, with speeds peaking at elevated.

Predominantly Unsettled to Active geomagnetic conditions are expected throughout, with a Chance of G1/Minor geomagnetic storms (Kp 5) on days 1-3 (15-17 Feb), initially due to coronal hole high speed stream influences but perhaps later due to possible glancing coronal mass ejections. By day 4 (18 Feb) solar wind speeds and and current coronal mass ejection risks are expected to have eased with geomagnetic activity falling back to Quiet to Unsettled (Kp 0-3).

Energetic Particles / Solar Radiation: There is a marginally increasing slight chance of a solar radiation storm S1 events given the westward progression of current active regions.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	**G1 to G2**	No	50	40	30	5
Strong	**G3**	No	1	1	1	1
Severe	**G4**	No	1	1	1	1
Extreme	**G5**	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**R1-R2 (M Class)**	Yes	60	60	60	60
Very Active	**R3-R5 (X Class)**	No	10	10	10	10

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	10	15	15
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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